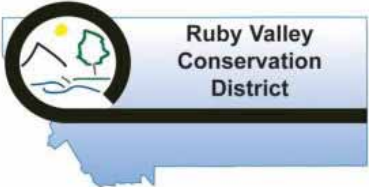


Smith Slough & Smith Ditch Fisheries Enhancements

Madison County, Montana

Preliminary Design Plans

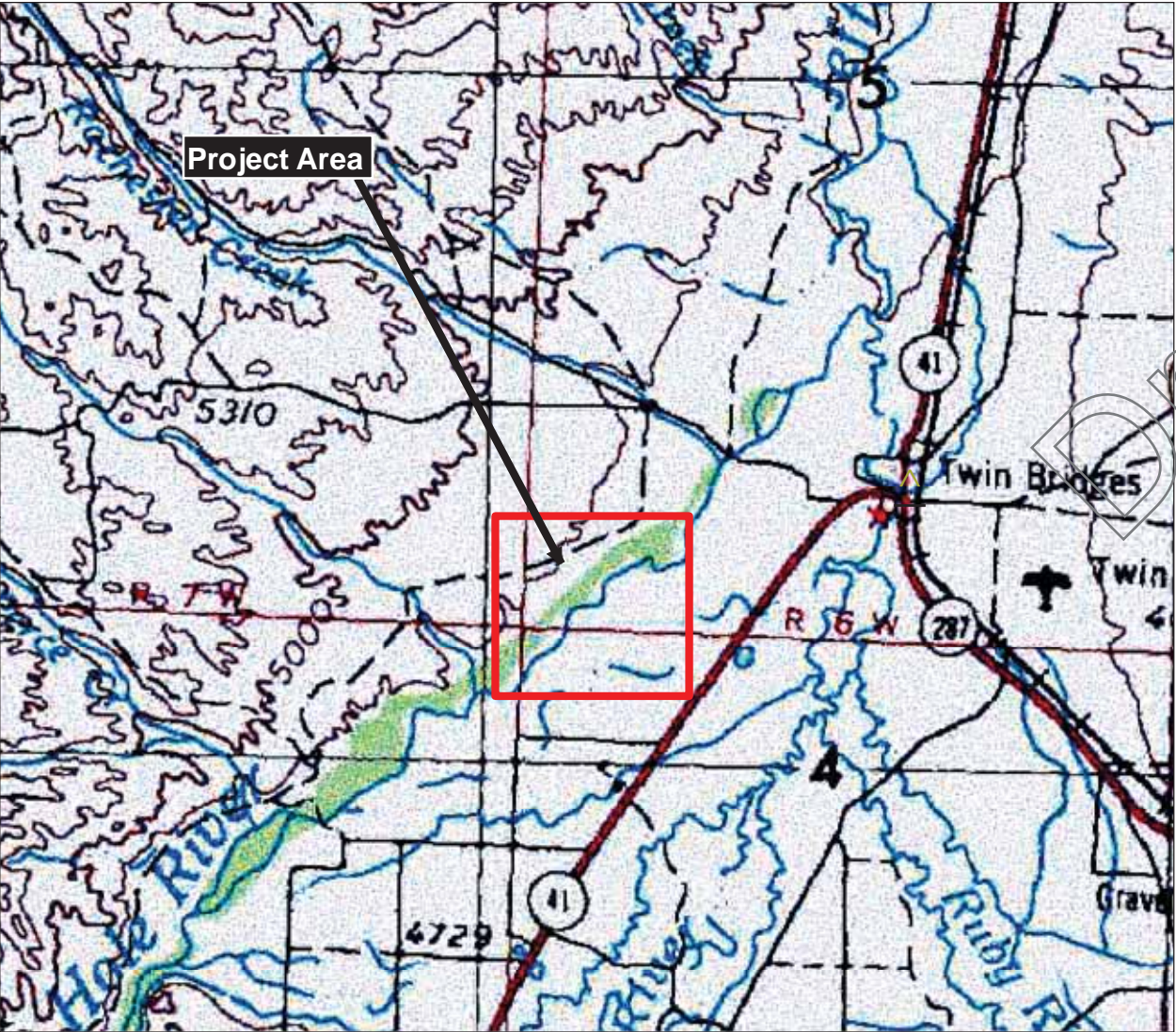
PREPARED FOR:
RUBY VALLEY CONSERVATION DISTRICT



PREPARED BY:
CONFLUENCE CONSULTING, INC.



P.O. BOX 1133
BOZEMAN, MT 59771
(406) 585-9500



PROJECT VICINITY MAP

SHEET INDEX

SHEET #	SHEET DESCRIPTION
1.	COVER SHEET
2.	PROJECT OVERVIEW
3.	PLAN VIEW - REACHES 1 & 2
4.	PLAN VIEW - REACH 3 & UPPER SMITH DITCH
5.	PLAN VIEW - REACHES 4, 5, & LOWER SMITH DITCH
6.	CHANNEL BED PROFILE - SIDE CHANNEL REACHES 1-5
7.	CHANNEL BED PROFILE - SMITH DITCH
8.	TYPICAL CROSS SECTIONS - SIDE CHANNEL & SMITH DITCH
9.	ALTERNATIVE 1A - RELOCATE DIVERSION STRUCTURE
10.	ALTERNATIVE 1B - RELOCATE HEADGATE
11.	ALTERNATIVE 2 - RELOCATE UPPER SMITH DITCH
12.	ALTERNATIVE 3- LOWER OXBOW RELOCATION
13.	SOD BORROW LOCATIONS

DATE: 05/07/14

COVER SHEET

SHEET: **1**



Legend

- Smith Slough Reach Breaks
- Smith Ditch Centerline
- Smith Slough Channel Centerline

PROJECT OVERVIEW

SHEET: 2

SMITH SLOUGH & SMITH DITCH FISHERIES ENHANCEMENTS

MADISON COUNTY, MONTANA

CONFLUENCE

consulting incorporated

DRAWN BY: B. SCHULTZ

DESIGNED BY: M. SANCTUARY

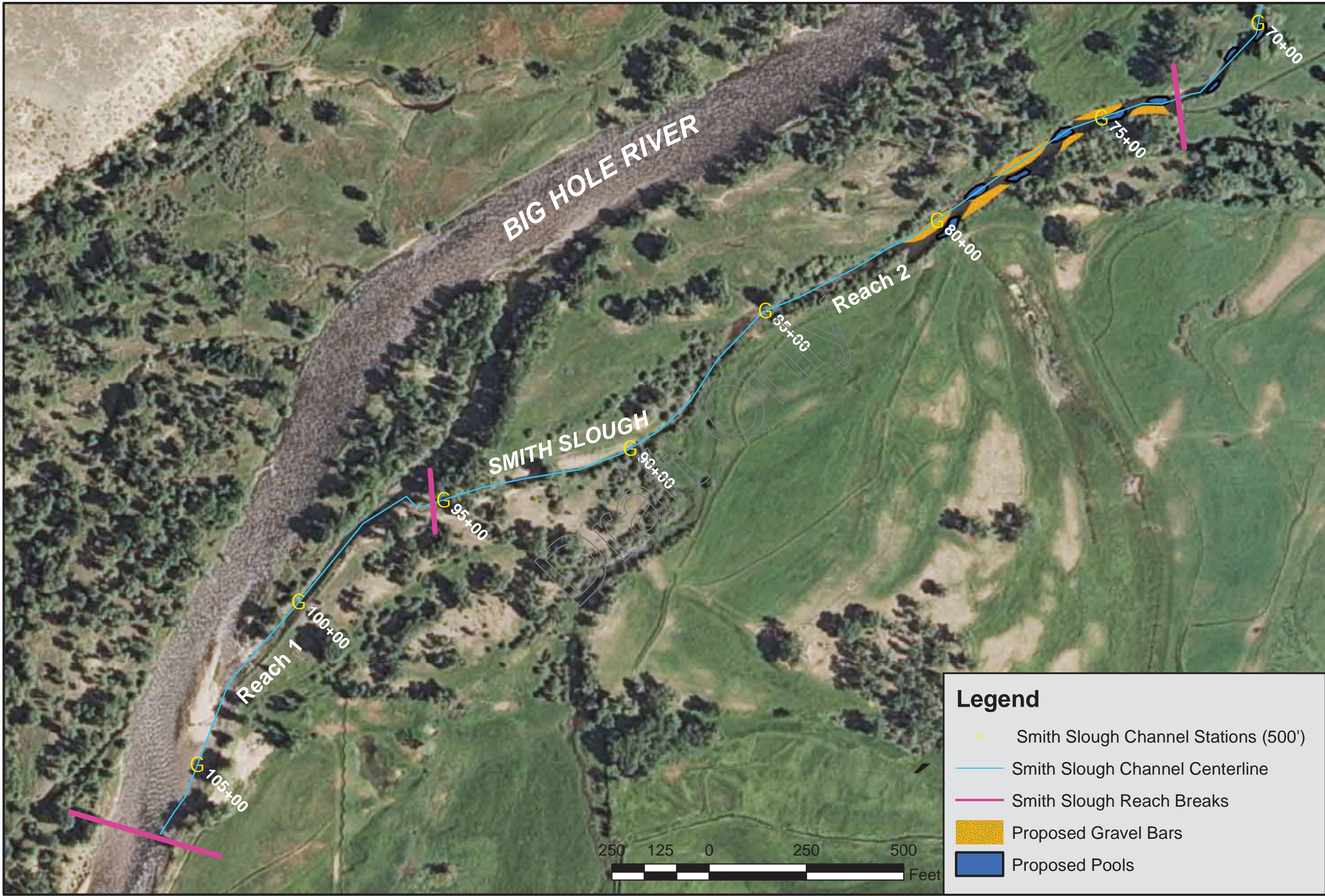
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DATE: 05/07/2014

CCJ JOB NO. RYCD 004

FILE NAME: 05m20140507

REV	DATE	DESCRIPTION	BY	APPD



Legend

- G Smith Slough Channel Stations (500')
- Smith Slough Channel Centerline
- Smith Slough Reach Breaks
- Proposed Gravel Bars
- Proposed Pools

**SMITH SLOUGH & SMITH DITCH
FISHERIES ENHANCEMENTS
MADISON COUNTY, MONTANA**

PLAN VIEW
REACHES
1 & 2

SHEET: **3**

DRAWN BY: B. SCHULTZ		DATE: 03/07/2014	
DESIGNED BY: M. SANCTUARY		CCL JOB NO: RVCD 004	
CHECKED BY: M. SANCTUARY		FILE NAME: PlanView Reaches 1 & 2	
REV	DATE	DESCRIPTION	BY



BIG HOLE RIVER

SMITH SLOUGH

SMITH DITCH

Reach 3

Legend

- G Smith Slough Channel Stations (500')
- G Smith Ditch Stations (500')
- Smith Slough Channel Centerline
- Smith Ditch Centerline
- Smith Slough Reach Breaks
- Proposed Spawning Reach
- Proposed Gravel Bars
- Proposed Pools

DATE: 08/07/2014
CCJ JOB NO. RYCD 004
FILE NAME: PlanView Reach 3 Upper Smith.sxd

DRAWN BY: B. SCHULTZ
DESIGNED BY: M. SANCTUARY
CHECKED BY: M. SANCTUARY

REV	DATE	DESCRIPTION	BY	APPD

**SMITH SLOUGH & SMITH DITCH
FISHERIES ENHANCEMENTS
MADISON COUNTY, MONTANA**

PLAN VIEW
REACH 3 &
UPPER SMITH
DITCH

SHEET: **4**



Legend

- G Smith Slough Channel Stations (500')
- G Smith Ditch Stations (500')
- Smith Slough Channel Centerline
- Smith Ditch Centerline
- Smith Slough Reach Breaks
- ▨ Proposed Spawning Reach
- ▨ Proposed Gravel Bars
- Proposed Pools

DRAWN BY: B. SCHULTZ		DATE: 08/07/2014
DESIGNED BY: M. SANCTUARY	CCI JOB NO: RYCD 004	
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BY	APPD	

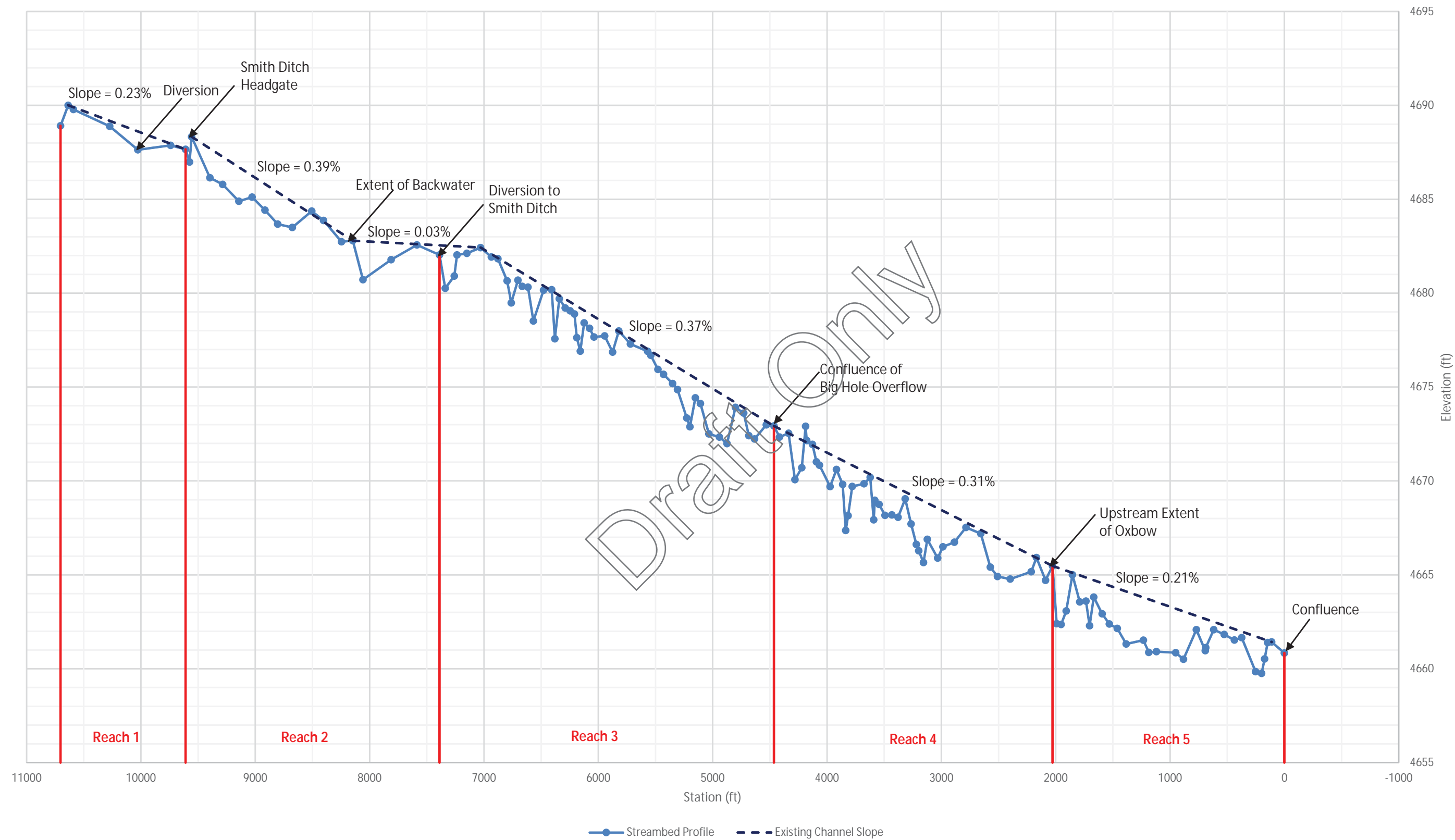


**SMITH SLOUGH & SMITH DITCH
FISHERIES ENHANCEMENTS
MADISON COUNTY, MONTANA**

**PLAN VIEW
REACHES 4,
5, & LOWER
SMITH DITCH**

SHEET: 5

Smith Slough Profile



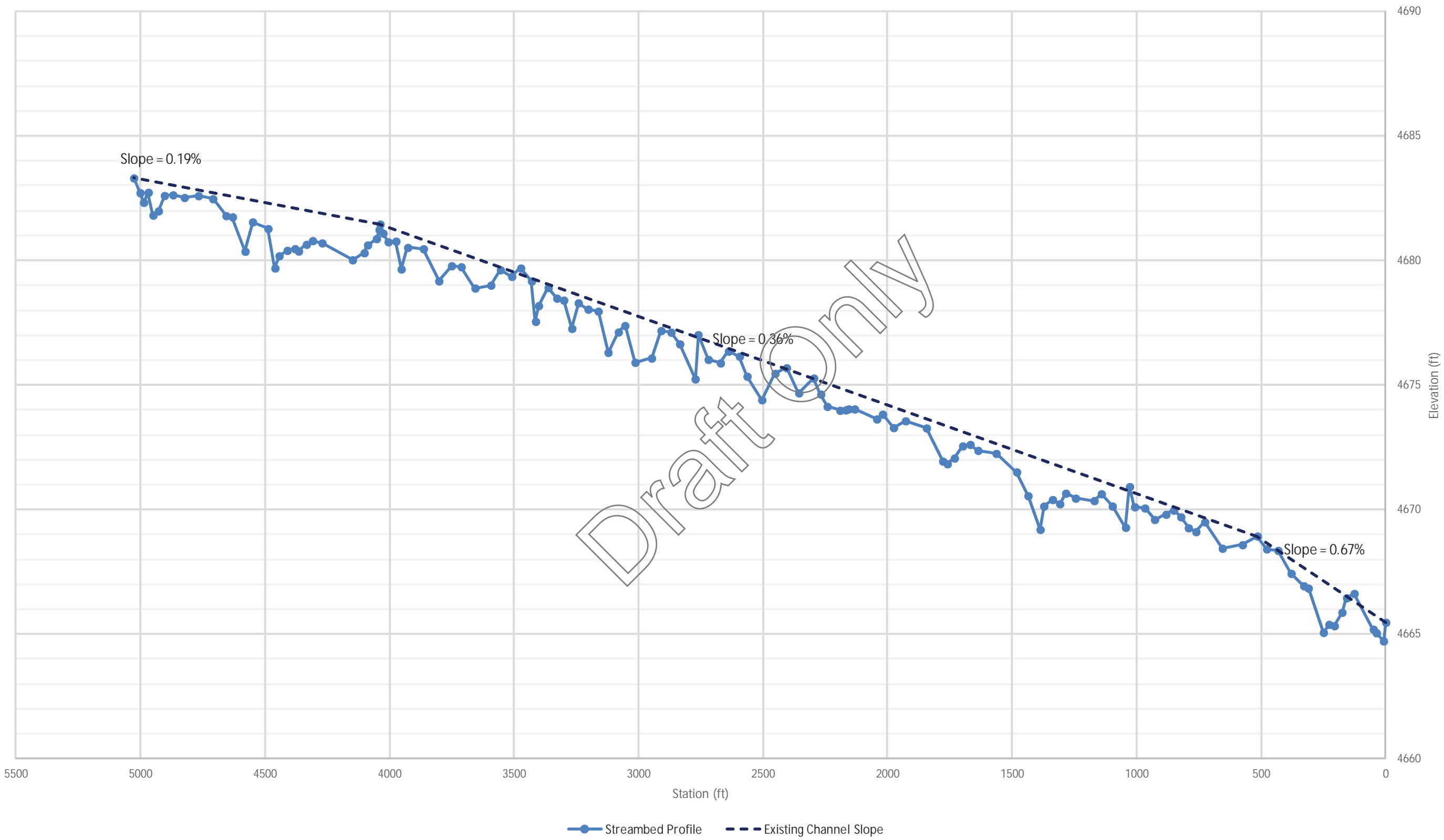
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REV.	DATE	DESCRIPTION	BY	APPD



SMITH SLOUGH & SMITH DITCH
FISHERIES ENHANCEMENTS
MADISON COUNTY, MONTANA

CHANNEL
BED
PROFILES
REACHES 1-5

Smith Ditch Profile



DRAWN BY: B. SCHULTZ		DATE: 05/07/2014
DESIGNED BY: M. SANCTUARY	CCJ JOB NO: RYCD 004	
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REV	DATE	DESCRIPTION
BY	APPD	



SMITH SLOUGH & SMITH DITCH
FISHERIES ENHANCEMENTS
MADISON COUNTY, MONTANA

CHANNEL
BED
PROFILE
SMITH
DITCH

EXISTING VEGETATION

MAINTAIN BACKWATER HABITAT
WHERE EXCESS GRAVEL OR SEDIMENT IS AVAILABLE,
PLACE IN OVERBANK AREA AS DIRECTED BY ENGINEER

SOD MAT RELOCATED TO
CONSTRUCT NEW STREAM BANK

~23 FT

EXISTING CHANNEL BED

INSTALL BASE FOR SOD MATS USING
MATERIAL EXCAVATED FROM STREAMBED

BIG HOLE RIVER SIDE CHANNEL CROSS SECTION
TYPICAL CHANNEL NARROWING AND HABITAT ENHANCEMENT PROPOSED IN REACHES 2, 4, AND 5

EXISTING GROUND

1.5 FT

EXCAVATE 1.5 FT OF EXISTING BED
AND INSTALL SPAWNING GRAVELS

SMITH DITCH CROSS SECTION
TYPICAL SPAWNING RIFFLE/RUN FEATURE

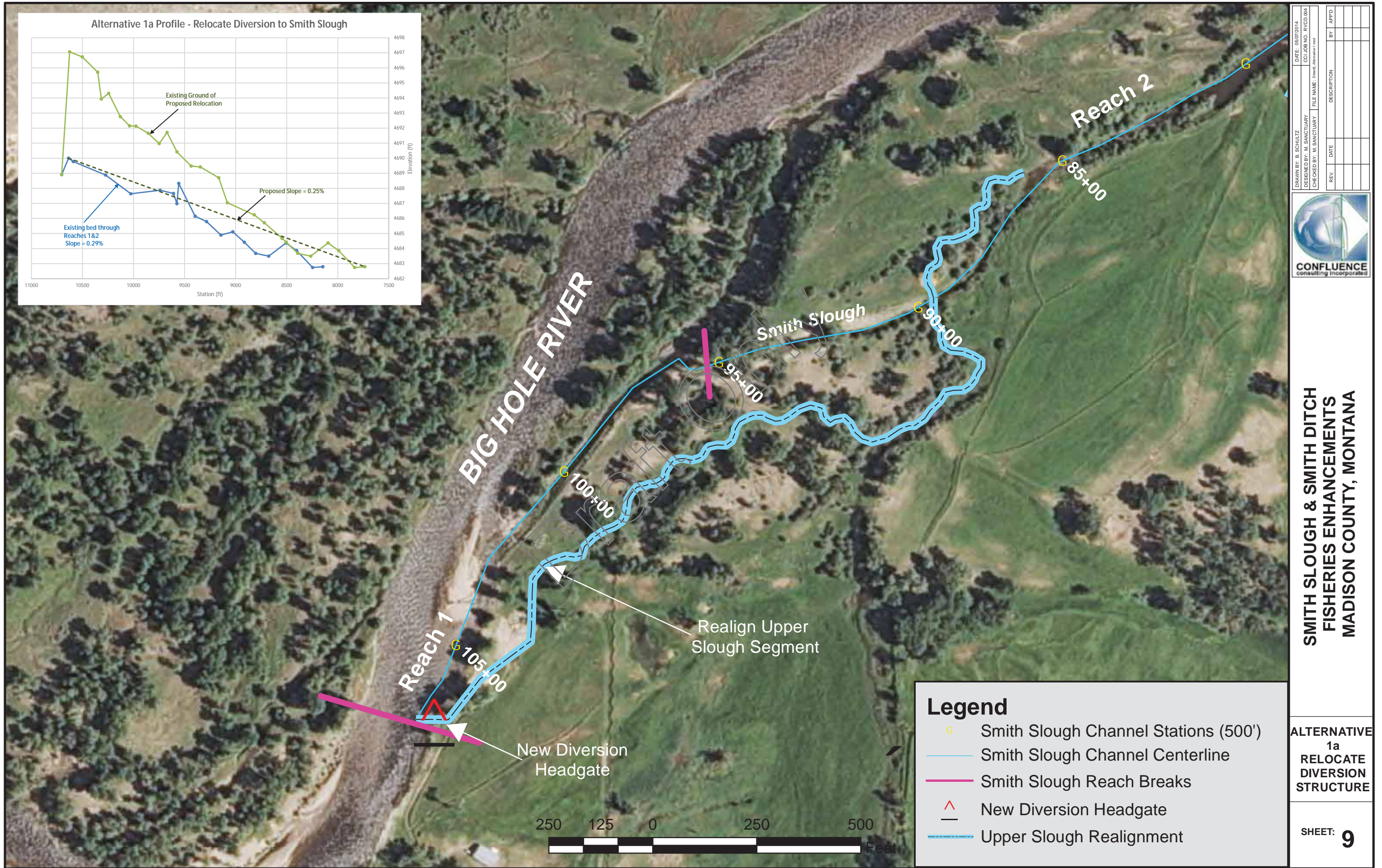
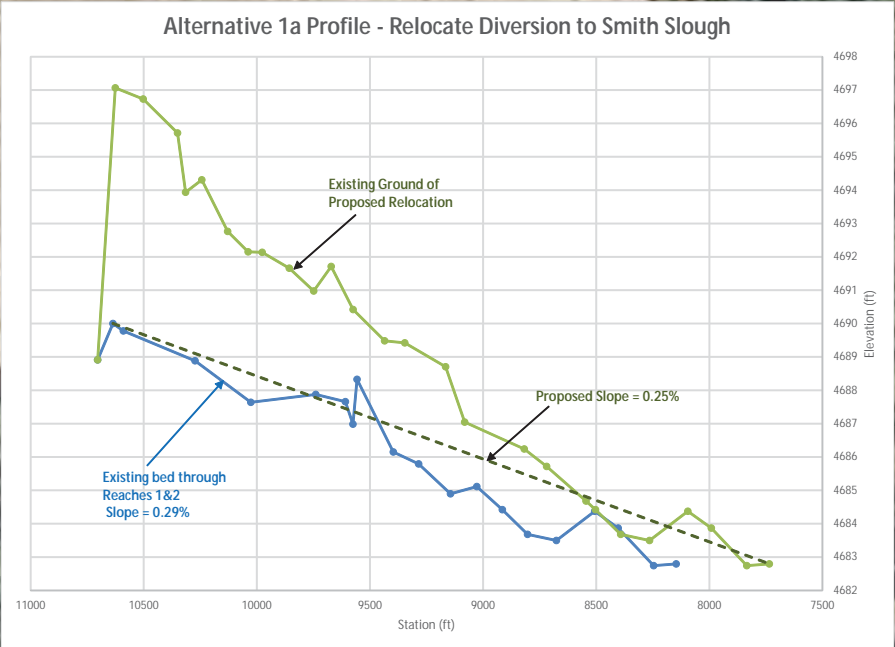
Spawning Gravel Gradation	
Screen Size (inch)	Percent Passing by Dry Weight
3	100
2	65-85
1	40-60
0.7500	15-30
0.2500	0



DRAWN BY: R.B.		DATE: 04/25/14		
DESIGNED BY: T.T., M.S.		CCI JOB NO. RVCD.004		
CHECKED BY: M.S.		FILE NAME: SMITH DITCH.XSDWG		
REV.	DATE	DESCRIPTION	BY	APPD

BIG HOLE RIVER SIDE CHANNEL &
SMITH DITCH FISHERIES ENHANCEMENTS
MADISON COUNTY, MONTANA

TYPICAL
CROSS
SECTIONS

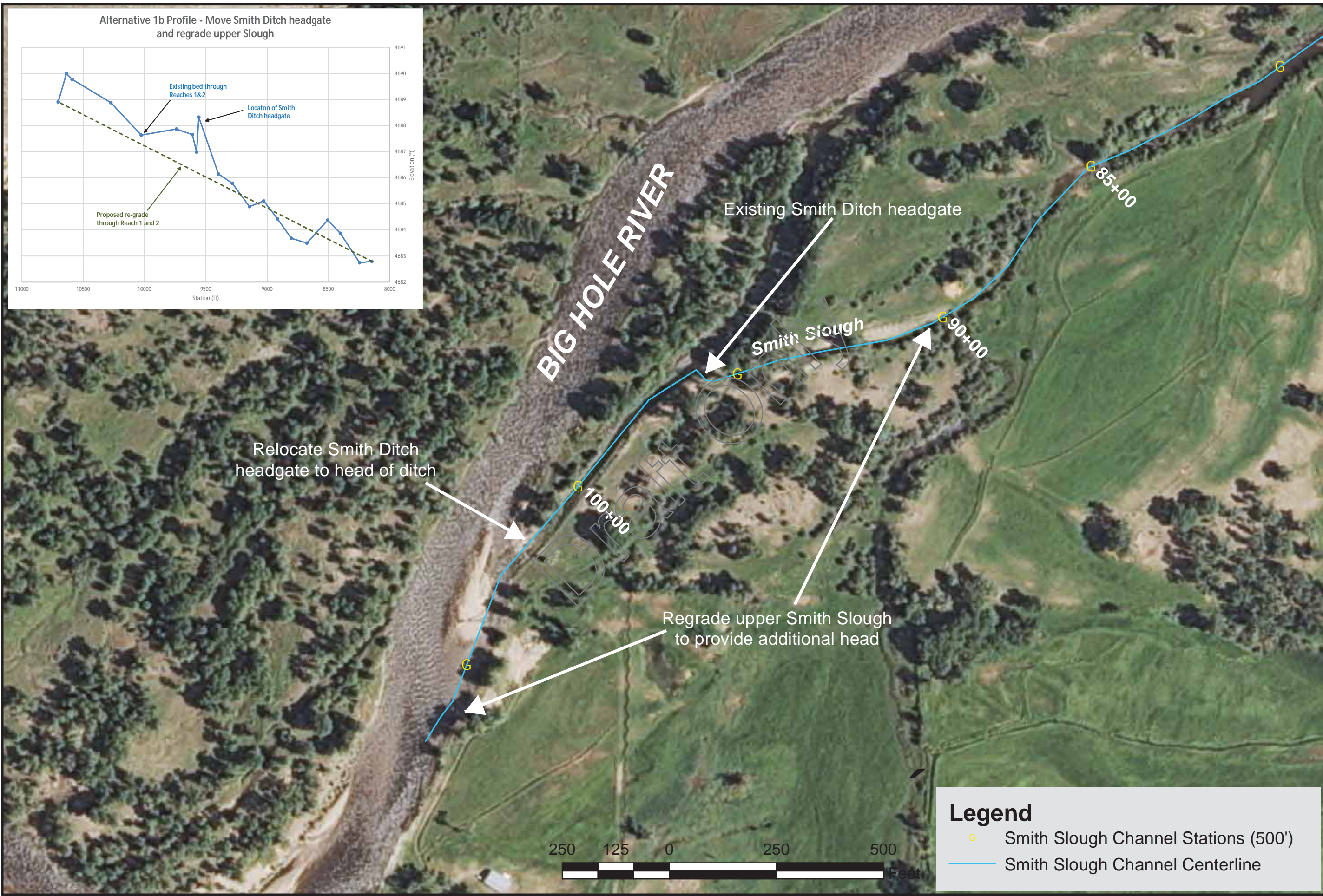
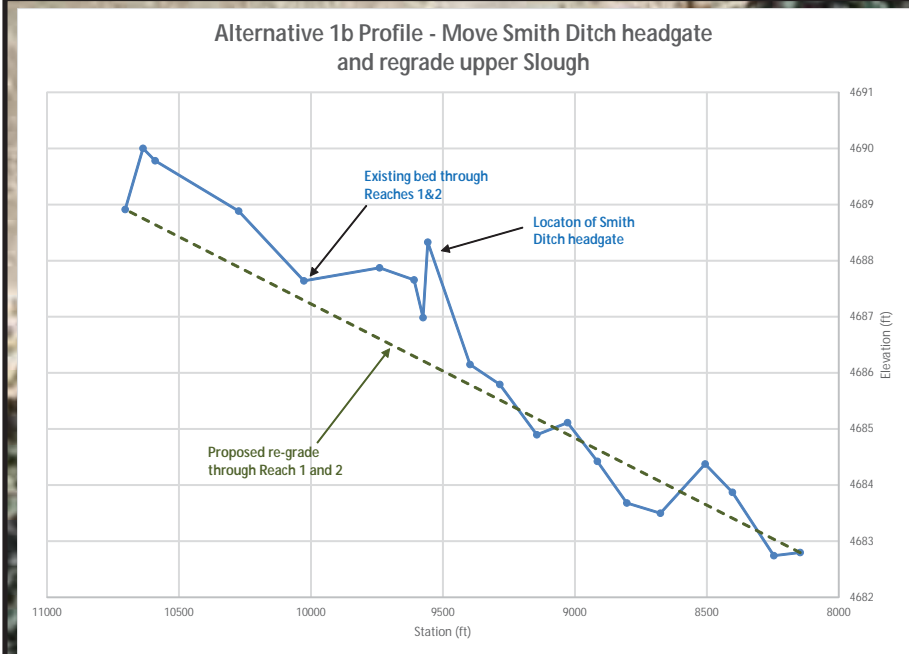


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SMITH SLOUGH & SMITH DITCH
FISHERIES ENHANCEMENTS
MADISON COUNTY, MONTANA

ALTERNATIVE
1a
RELOCATE
DIVERSION
STRUCTURE

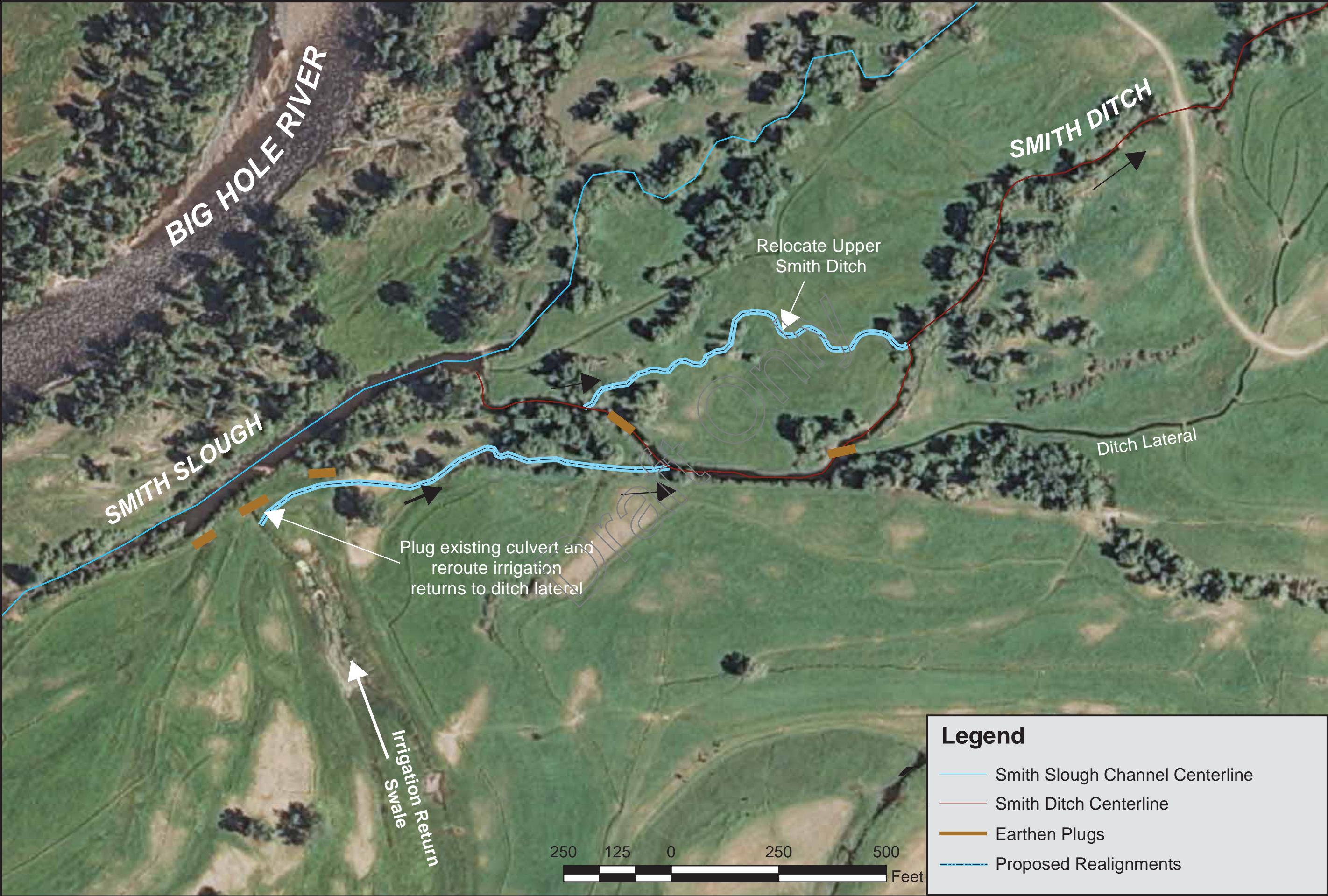


DRAWN BY: B. SCHULTZ		DATE: 08/07/2014
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BY	APPD	

SMITH SLOUGH & SMITH DITCH FISHERIES ENHANCEMENTS MADISON COUNTY, MONTANA

ALTERNATIVE 1B RELOCATE SMITH DITCH HEADGATE

SHEET: 10



Legend

Smith Slough Channel Centerline

Smith Ditch Centerline

Earthen Plugs

Proposed Realignments

DRAWN BY: B. SCHULTZ

DESIGNED BY: M. SANCTUARY

CHECKED BY: M. SANCTUARY

REV

DATE: 05/07/2014

CCJ JOB NO. RYCD 004

FILE NAME: Smith Slough Alternative 2.dwg

DATE

DESCRIPTION

BY

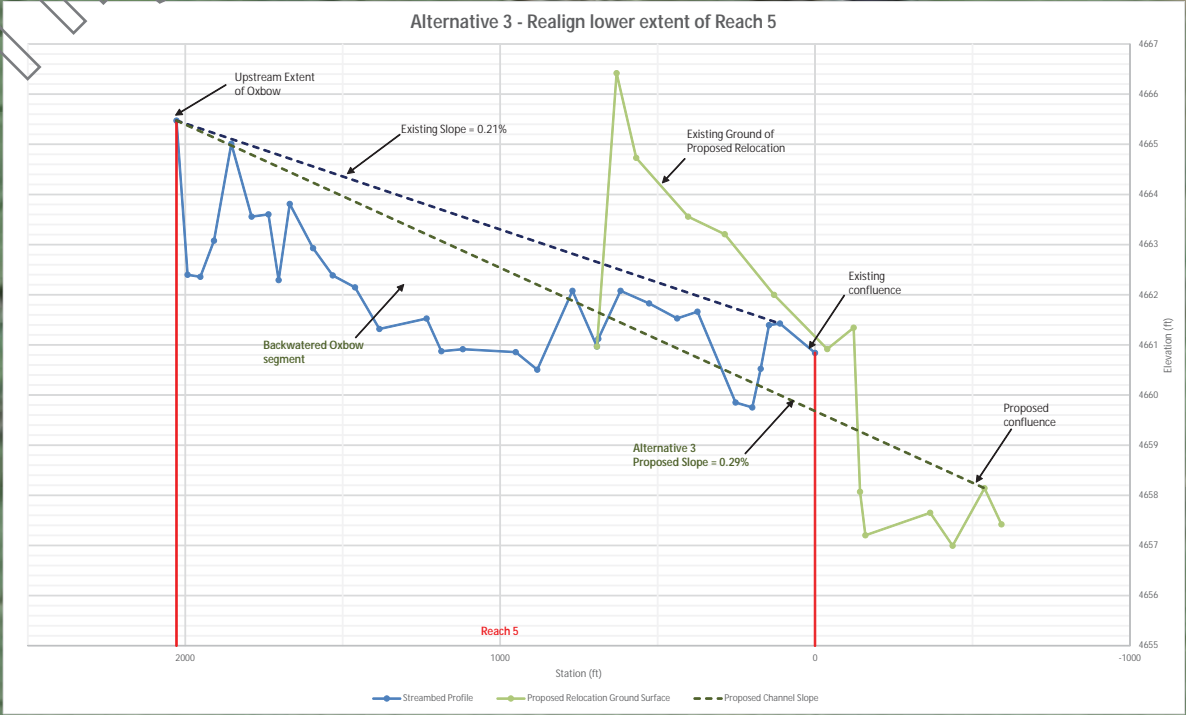
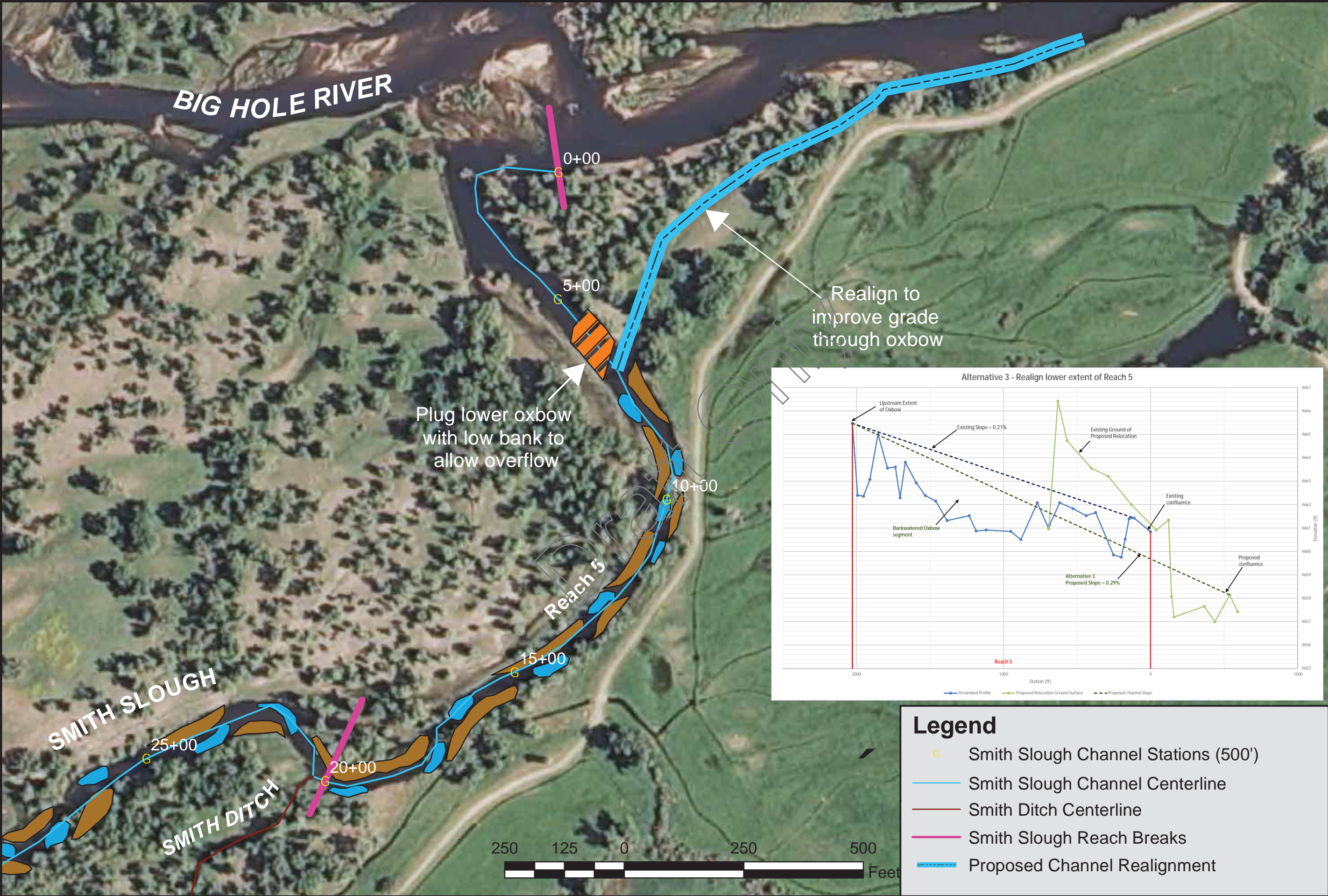
APPD



**SMITH SLOUGH & SMITH DITCH
FISHERIES ENHANCEMENTS
MADISON COUNTY, MONTANA**

ALTERNATIVE
2
RELOCATE
UPPER
SMITH
DITCH

SHEET: **11**



- Legend**
- Smith Slough Channel Stations (500')
 - Smith Slough Channel Centerline
 - Smith Ditch Centerline
 - Smith Slough Reach Breaks
 - Proposed Channel Realignment

DRAWN BY: B. SCHULTZ	CCJ JOB NO. RYCD 004	DATE:
DESIGNED BY: M. SANCTUARY	FILE NAME: Smith Slough.dwg	
CHECKED BY: M. SANCTUARY		
REV	DATE	DESCRIPTION
BY	APPD	



**SMITH SLOUGH & SMITH DITCH
FISHERIES ENHANCEMENTS
MADISON COUNTY, MONTANA**

**ALTERNATIVE
3
LOWER
OXBOW
RELOCATION**

